

Creativity and Supplemental Instruction

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Introduction and acknowledgements

This paper summarises the results of two email surveys conducted to inform a keynote presentation at the 4th International Conference on Supplementary Instruction Malmö Sweden May 24-26 2006. The purpose of both surveys was to encourage faculty/tutors who were knowledgeable about SI to share their understandings of creativity in the higher education learning, and more specifically, the Supplemental Instruction / Peers Assisted Learning context. The assumption is made that in SI there are four actors involved students and teachers, SI Leaders and the Supervisors of the SI process and SI Leaders. The focus of enquiry is firmly on the later two groups of actors.

The work complements other studies in the UK aimed at understanding the nature of creativity in higher education and the way in which different pedagogies can support students' creative development being undertaken by the Imaginative Curriculum network
<http://www.heacademy.ac.uk/creativity.htm>

I am very grateful to everyone who contributed to the surveys. Additional perspectives are very welcome. Please send comments to Norman.Jackson@surrey.ac.uk.

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PERCEPTIONS OF CREATIVITY

What sort of things do you associate with creativity in any context?

- Taking risk
- Imagination
- Curiosity
- An open minded context
- An open mind and willingness to try new things/practices/ideas.
- Playfulness
- A flow of positive energy
- Space and time
- Enthusiasm
- Love
- Support
- Courage
- Astonishment
- Crossing border
- Liberation
- Thinking out of the box

- Ability to think and deliberately behave in ways that are not expected/outside the norm. The confidence to do this.
- To question accepted norms.
- Initiative – creativity involves being pro-active and inventive
- Having a “holy curiosity” – wanting to see what else might be accomplished or discovered by trial and error
- Risk Taking – willing to take the chance of your idea being ridiculed
- A Sense of Humor – creativity coupled with a positive attitude and a bit of humor results in better receptivity
- "The important thing is not to stop questioning.... Never lose a holy curiosity." --Albert Einstein
- Being able to step outside the box. In many areas, there is usually an order or a preferred way to accomplish something. Being truly creative, one must be able to change the order or way and try something new, whether it leads to success or failure.
- Curiosity, stubbornness (to not give up to soon), happiness, imagination, be able to adjust to new surroundings/demands

What sort of things do you associate with creativity in tertiary/higher education learning?

- You got time to think
- They provide you with knowledge to think further on
- You meet and discuss with peers who think and handle differently
- Meeting with stimulating teachers
- A positive time in life
- Being connected to an institution where creative people work
- It's a strict world we live/work in at higher education but also small steps can give “big” result.
- Creativity in higher education is, due to me, the ability to adept to the group of students and the subject that you teach in.
- A common spirit of freedom to learn “in my own way”
- An ability and possibility to quick change of your way of teaching due to circumstances in the room.
- There has to be an “mandate” from the board, giving you a feeling of allowance and an attitude of encouragement to work creatively.
- One obstacle I see is in “making” all students understand their own responsibility in the learning-process (immaturity). If they are insecure they might have a feeling of the lesson as not being structured enough, and the critic will follow.
- Methods and styles of delivery that are fresh, new and exciting.

CREATIVITY AND TEACHING

What sort of things do you associate with creativity in higher education teaching?

- When it comes to teaching, the goal is to make the students understand. Creativity in teaching means that teachers **find ways to make the students understand**. Lecture format may not be the best delivery system for the students to understand. Therefore, the teacher must change the delivery. Teachers must be creative and find different ways to help the student understand. If the teacher does not make the students understand, then teacher is not teaching; they are just listening to themselves talk.
- Paying attention to your audience – listening to them, determining their learning styles and what they need and want to know and then putting that in an enticing package.
- Being able to see the broader picture – looking ahead to see how one piece of creativity can interconnect with larger issues.
- Being persuasive – convincing students, who think that anything too different or fun can't be worthwhile, that this is a good idea to at least try.
- Being willing to change pedagogical styles at the risk of colleagues' skepticism – always wanting to improve the methods of processing information and promoting discovery
- The same as above (curiosity, stubbornness (to not give up to soon), happiness, imagination, be able to adjust to new surroundings/demands. The problem is that it is hard to teach someone to have imagination or to be curious. But higher education teaching should provide a learning

situation that are favourable for the creative students. The lecturers can be role models and show their own creativity as examples.

1) What sort of experiences does Supplementary Instruction provide that enables students to be creative?

2) What sort of experiences does SI provide that encourage SI Leaders to utilise their creativity?

§ A no Judgemental context

- Stimulate to ask questions
- Learn to listen to each other
- Acceptance and a safe environment
- Positive feedback (a bad answer is handle with respect)
- Stimulate meetings and to work with each other collaboratively
- You also learn that other learn differently
- A variation of strategies will be used to help you on a meta-cognitive level get skilled to learn
- You realize that people think and learn differently and learn that this is helpful in your own learning
- The group plays the puzzle together
- You stimulate to start even if you are unsure
- To live and breath the help of each other in group sessions and discussions.
- Our SI-leaders are told to “learn to wait” for each individual and their own action/reaction/answer.
- In a deep sense the experience of the responsibility to “my own learning”, how & why.
- Training sessions. Experience on their courses of innovative teaching strategies.
- SI provides the arena for practicing their interpersonal skills, leadership skills, and developing pedagogical techniques – some very good students have to learn how to create an very relaxed, informal, and non-threatening environment for their peers
- Each leader has the opportunity to design interactive study sessions with emphasis on meeting various learning styles by considering the material, the types of students, and the resources available
- Effective SI leaders constantly check for understanding. They constantly offer different ways of questioning to check for understanding. They create new ways to evaluate the students to check for understanding. They must simplify or modify questions and/or problems to allow for the students to understand what is being asked. Effective SI leaders anticipate questions from students and provide opportunities for the students to discover the answers on their own or using the resources they have. An example: In a College Algebra course, a function is term that is defined and used. However, professors assume that all students understand what a function is, and if they don't know, the textbook has a definition. A creative SI leader recognized that students did not understand what a function was. The leader then gave a real-world example of a function and then asked the students to come up with their own real world examples. Then, as a class, they discussed each student's example and decided if the example satisfied the definition of a function. The students were able to connect the new knowledge of a function with something they had already experienced in the real world. Now, the students understood the definition of a function. What is great about this example is the SI leader checked for understanding (something few professors do) and then used their creativity to construct an activity that allowed the students understand the information presented.

CREATIVITY AND THE SI LEADER ROLE

1) What sort of creativity do students (SI Leaders) use when they are engaged in SI?

2) What sorts of creative abilities and behaviours contribute to being an effective SI

Leader

- 1 In SI context: SI-leaders who try new ways of doing math and who are open to change their way of acting (as in personal development).
- New ways of thinking and in learning the subject (skills)
- To post questions to yourself and to others about the thinking and on the process to the solution
- Playfulness, its fun to learn
- Self-confidence
- They learn to relax/to get over the wall of anxiety
- Self-esteem gives courage and a way of being able to express oneself
- Confidence in knowing “I can” or “I can learn” this

- This was a difficult question to which I have no answer. I hope someone else can give you an answer.
- 1 In SI: we try to give back the playfulness, so often lost on their educational path, to our SI-leaders and students.
- Difficult question, but I will answer shortly. There is different ways of how we relate to different situations, for example a critical way or a scientific way, the creative way, I believe, should also be considered here. We all have to create the conditions for a creative way of relating to the world around us. This makes it possible to give people the possibility to solve problems, individually as well as collectively. At a SI-session, the SI-leader creates these possibilities to make it possible for the group to solve the problem (tasks/matters) in a creative way. This gives the possibility for a creative solution to emerge, one solution as good as any other.
- Being imaginative in ways that information / ideas are talked about.
- Having curiosity about the subject and, crucially, people.
- All of the aforementioned qualities (the same ones that characterize teaching) serve SI Leaders as well i.e.
- Paying attention to your audience – listening to them, determining their learning styles and what they need and want to know and then putting that in an enticing package
- Being able to see the broader picture – looking ahead to see how one piece of creativity can interconnect with larger issues
- Being persuasive – convincing students, who think that anything too different or fun can't be worthwhile, that this is a good idea to at least try
- Being willing to change pedagogical styles at the risk of colleagues' skepticism – always wanting to improve the methods of processing information and promoting discovery
- Being willing to make a fool of oneself in order to make a point
- *I was asked to demonstrate schizophrenia in an anatomy and physiology session I was observing one evening, for example. It was the night before the presidential election, so I pretended to talk to both candidates and played up their weaknesses. The students said later that because of the crazy stuff I did they all got that question right on the exam.*
- A sense of humor
- Inventiveness with the material
- 2 Being willing to try something and not have it go as well as intended, and being willing to 2 try it again with a slightly different angle
- Listening to the students – deciphering what it is that they need to understand the material
- Persuasive abilities – convincing students that conceptual knowledge contributes to understanding and greater confidence especially when taking exams – convincing them that this or that activity will have greater dividends than immediate solutions
- *"Give a man a fish and he has food for a day. Teach a man to fish and he has food for a lifetime."* – Chinese wisdom
- Curiosity, stubbornness (to not give up too soon), happiness, imagination, be able to adjust to new surroundings/demands
- Being imaginative in ways that information / ideas are talked about.
- Having curiosity about the subject and, crucially, people.

How are SI Leaders encouraged to recognise the importance of their own creativity in fulfilling their role? (forms of training/preparation, ongoing facilitation/conversation/guidance, reflective tools and processes to help develop self-awareness and self-efficacy/other?)

- Hiring – we look for a sense of humor, a proactive, creative way of approaching a certain concept, and ability to listen to and empathize with struggling students
- Training – group exercises, paired activities, brainstorming, mock sessions, activities aimed at redirecting questions, discovering one's own learning style, inventing SI skits, etc. We may do the "rope walk" at our next training – an activity that involves physically working together to reach a goal followed by processing it with group discussion
- Creative activities are recognized – each leader is required to create a "fun" activity to share at our monthly meeting – all activities go into our "Best Practices" binder which is kept in the leaders' resource room

- Activities such as Fiddle Stix, Jeopardy, Role Playing, Large Diagramming, Silly Mnemonics, Flashcards, Simon Says, Bingo, Round Robin, Trigo, and the Function Machine are a few of the entries in that binder.
- Each campus has a vast resource of professors and experts in various fields – we invite a couple of them to come to our pre-semester training to lead workshops in motivation, diversity awareness, creativity, or oral presentation – this is actually a reaffirmation of the professors' creativity as well.
- Follow-up of observations of a leader's study session includes a brief one-on-one with two questions: What did you think you did well in this session? & What is something you'd like to improve on? Written feedbacks always include a suggestion for improving an activity or technique.
- I work with very creative people who are firmly based in creative thinking and working. To engage this with their SI work we have training, meetings throughout the year, and individual advice when necessary.
- One example is simulated SI-meetings followed by reflection and discussion to handle different problems.
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ROLE OF SUPERVISORS/COORDINATORS/TUTORS

What can the SI Supervisors/Coordinators do to encourage and support the development of SI Leaders' creative potential?

- Awards – Praise – and More Awards!
 - Leader of the Week (there's a set of criteria for that)
 - "We caught you . . ." awards – we try to catch someone doing something really positive or really Sl-ish – this can reward some of the less assertive leaders and encourage them to try harder
 - Candy Bar Awards – "we are giving Jane the Snickers award for her terrific sense of humor in her sessions", etc.
 - Sandwich feedback – Praise/constructive criticism/Praise
 - End-of-semester "FUN" awards – best analogies in sessions, most humor in sessions, best team player, most creative activity, etc.
 - Best Overall SI Leader – earns a Purdue blanket
 - "Tell and Show" time at monthly meetings – certain leaders are asked to tell and demonstrate a technique that works well for them – followed by a time to reflect on "how can I use this in my session?"
 - An "open door" policy, when possible, with the SI supervisor allows leaders to come in and address any problems immediately
 - I'd like to see some visible emblem or sash or cord for graduates to wear at graduation to indicate they've been a SI Leader for more than one semester.
- Good supervision and training recognizes the importance of creativity. Supervisors need to identify creativity in SI sessions and in training and promote these actions in training and during debriefings. Use the same examples they find in SI sessions and incorporate them into the training for other SI leaders to observe and use. Supervisors also need to research and attend trainings/workshops so that they are educated and are able to bring new techniques and ideas to the SI trainings.

WIDER INFLUENCE OF SI ON TEACHING AND LEARNING

How can SI stimulate teachers to be more creative in the design and facilitation of learning experiences?

- Examples of subtle influences of SI methodology at Purdue University:
 - PHYS 172 – required tutorials are now called "Discussion Groups"
 - HIST 103 – TA's use SI techniques in their Friday recitations so effectively that SI sessions were not well attended in that course
 - ENGR 126 – TA's are beginning to incorporate SI techniques
 - CHEM 257 – TA uses redirect questioning so effectively in her recitations that students were reluctant to attend SI sessions

- Supportive SI Data will definitely help departments “buy into” the SI idea
- Purdue has a Center for Teaching Excellence that incorporates, rewards, and shares the most creative teaching techniques on campus. Much of what the guest speakers share is SI theory.
- The same things as lecturers in higher education mentioned in 2. Be a sparring-partner for thoughts and ideas.
- Again I work in a very creative environment. Certainly the activities of individual SIs, and groups of SIs, can have an influence on more ‘traditional’ individual staff members.

Overall, do you feel that creativity is valued in the Supplemental Instruction process in your institution?

- Yes!
- Yes
- Yes. New and different techniques are shared and discussed at our institution. I am pleased to say that creative techniques are constantly being incorporated into the training of SI leaders and that creative techniques are supported and encouraged by supervisors. We have the philosophy that whatever it takes to make the students learn, we will do, try, change, or create
- Purdue is a very science, engineering, technology oriented institution. It’s very difficult to get “straight line thinkers” to push out the walls a bit. Generally speaking, Purdue professors, or for that matter, administrators, are not aware of what goes on in a typical SI session. Consequently, misconceptions arise unnecessarily at times. Those professors who understand and appreciate what SI is attempting to do are very appreciative of any creativity that the SI Leader can muster, especially since large lectures prohibit these more informal, hands on, on-the-level types of pedagogy. The professor for MGMT 200, for example, says he doesn’t know “what goes on in there,” but he knows “the kids like having someone leading the sessions who’s their age and that somehow, the leader makes it fun.” The professor for BIOL 203 says he knows his students get “something different from what I can give them.”
- I believe that the creative way of looking at subject matter and the sharing of learning techniques that are applicable for the average student that SI can provide on a campus of this sort is extremely important to the holistic development of students. I like these two quotes:

"With the possible exception of whales and porpoises, we are the only creatures who play all our lives. And because we do, we learn all our lives. The day we stop playing is the day we stop learning." -William Glasser, M.D.

"Games can evoke powerful learning. This begins when the learner, now a player, is challenged with the information item that provokes a search for the answer. When the correct answer is aired, the learning is immediately reinforced. This learning transfer happens over and over during the game. This 'moment of learning' is not only powerful but often remains long after the learning or game has been completed." -Steve Sugar

How is a student’s creativity recognised and valued through SI activities?

- High order answerers is valued
- By new questions from SI leaders to stimulate to think and go further
- Role-modelling
- SI-leaders are observed/supervised and encouraged to support any ideas or questions coming up during a SI-session. At the same time they have to consider every individuals space and reluctance to learn.

What other questions might be asked about creativity and Supplemental Instruction?

- How can we implement /train/talk about creativity in the training
- How can the supervision stimulate creativity
- How can SI stimulate the teachers to be more creative in their lectures

First a distinction has to be made – students are:

A) students who attend SI-sessions B) SI-leaders who give SI-sessions

As an answer to what other questions to be asked there is many, but some deeper consideration of the similarities/differences in a group- contra individual mind would be interesting.

Another question is the importance of personal management/development in any role (teacher, student, SI-leader, human being) as a leader of some kind (for one self or in front of others)

ANOTHER APPROACH TO EVALUATION

Jackson and Shaw (2006) have identified a number of features associated with creativity or with being creative regardless of disciplinary, pedagogic or problem working context. These features were used as an evaluation tool by ES to see how they might be manifested in the SI Leader role.

- **Being imaginative – generating new ideas, thinking out of the boxes we normally inhabit, looking beyond the obvious, seeing the world in different ways so that it can be explored and understood better.**

*Being imaginative doesn't come easy for many students. This process involves going above and beyond what is expected, as you say, seeing the world differently. Many students, not just in this institution, but in many other American institutions, go through college learning **how not to make mistakes** rather than mastering and really exploring and enriching the material they encounter. SI is one medium that can enrich and enhance what has gone on in the classroom using different examples and illustrations and different methods of sifting out answers. SI Leaders have to generate ways to arouse the curiosity of their peers and design different ways of perceiving the material. A chemistry leader may have to use the analogy of human relationships using balloons or play dough to help students understand chemical compounds, for example. That's taking a risk that the students will think this is silly until they see how it helps their understanding.*

- **Being original. This embodies:**
 - **the quality of newness** for example: *inventing* and producing new things or doing things no one has done before;
 - **being inventive with someone else's ideas** – recreation, reconstruction, recontextualization, redefinition, adapting things that have been done before, doing things that have been done before but differently;
 - **and, the idea of significance** – there are different levels and notions of significance but utility and value are integral to the idea.

SI Leaders are often met with scepticism, much like innovative professors, when they try a new way of examining material. I always tell the leaders that teaching is a "beg, borrow, and steal" profession – that I expect them to see what has been done before them and add, expand, and adapt that to their own sessions. We keep the best lesson plans from each discipline in large binders in the SI Leader Resource Room so they can look at good examples when making their own plans.

- **Being curious and having an enquiring disposition – willing to explore, experiment and take risks** i.e. the attitude and motivation to engage in exploration and the ability to search purposefully in appropriate ways in order to find and discover. It is necessary to work in an uncertain world and often requires people to move from the known to the unknown.

Taking risks is particularly difficult for a peer leader. Undergraduates are still in the "I want to be liked" stage of life and are very self conscious about looking silly in front of their peers. I tell them not to give up if an activity bombs the first time and encourage them to give it another chance using a slightly different angle the next time. Leaders have to be confident enough in themselves to be willing to fail and then try again. If they just do things that make everyone feel "safe" all the time, they might be missing some of the best opportunities for discovery.

A quote I use to get the leaders to take risks is this one:

"Don't fear failure so much that you refuse to try new things. The saddest summary of life contains three descriptions:

Could have
Might have
Should have."
Louis E. Boone

- **Being resourceful – using your knowledge, capability, relationships, powers to persuade and influence, and physical resources to overcome whatever challenge or problems are encountered and to exploit opportunities as they arise.**

Clearly, SI Leaders have a persuasive job. Getting students to understand the importance of understanding **WHY** and not just **HOW** is a continual challenge for SI Leaders. The typical freshman student wants quick answers to a homework problem. Persuading the student to examine the concept that particular problem represents can require advanced psychology skills.

- **Being able to combine, connect, synthesise complex and incomplete data/situations/ideas/ contexts in order to see the world freshly/differently to understand it better, solve problems or create and exploit opportunities.**

SI Leaders have to have a thorough grasp of the subject matter and should understand it at higher levels in order to connect the basic material to the “larger picture.” For example, the math department wants the SI Leader for algebra to have a good mastery of calculus since math continually builds on previous concepts.

- **Being able to think critically and analytically** – its not enough to generate lots of ideas we also have to be able to evaluate them in order to distinguish useful ideas from those that are not so useful and make good decisions about how to act.

That “holy curiosity” that Einstein talks about is what SI attempts to inspire. (By the way, our SI offices have Curious George motifs – curtains, pillows, posters, and stuffed monkeys - to symbolize the importance of arousing curiosity and to remind us all that mistakes are just a part of learning.) Curiosity leads to higher levels of critical thinking. Being able to see a solution from several different angles and to evaluate by comparing which one or ones make the most sense gets students above the basic level of memorization and recall. Distinguishing is one of the basic functions of life. One of the beauties of SI is that it is structured to enhance and expand on the material in a way that can’t be done in lectures or even recitations. There is something almost magical at times about the way in which a small group of students, encouraged by the SI Leader, can push each other to higher levels of thinking and involvement.

- **Being able to represent ideas and communicate them to others** – the capacity to explain in many different ways, to persuade others and show people possibilities, opportunities and solutions in ways that make sense to them and / or capture their imagination.

Of the Student Leaders, current and former, who responded to my online questionnaire about how being a SI Leader helped them as a student and post graduation, 90% listed “public speaking skills” as the number one skill they developed. In the focus group with current leaders, confidence was mentioned most as one of the attributes gained during their tenure as a peer leader. Our two days of pre-semester training deals with techniques such as Socratic Questioning which is one way to get students out of passive and into active mode. SI Leaders have the unique opportunity to not only **show** students other possibilities, but even more so, to get them to **discover** other possibilities. And getting students to show and help each other discover solutions is yet another challenge for SI Leaders. Enthusiasm hasn’t been mentioned in this summary, and perhaps it goes without saying; but a passionate leader can stimulate students to rise above the basics, to at least tolerate material they thought they didn’t like, and to even delve into higher realms of thinking and learning. Here’s to SI and its energetic and enthusiastic leaders!

Reference

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